

Appl. No. 10/671,359  
Amdt. dated March 20, 2007  
Reply to Office Action of December 26, 2006

RECEIVED  
CENTRAL FAX CENTER

MAR 20 2007

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please amend claims 1, 2, 3, 5 – 8, 12, 14, 15.

Claims 9 – 11 and 13 were previously amended.

Please cancel claims 4, 16, 17, 18.

Please add new claims 19 and 20.

**Listing of Claims:**

1. (currently amended) A method for implementing a database, comprising the steps of:

- (i) determining the initial read/write ratio of said database;
- (ii) comparing said initial read/write ratio of said database to a critical read/write ratio;  
and
- (iii) if said initial read/write ratio is greater than said critical read/write ratio, then  
performing the following method steps:
  - (a) providing defining at least one set of linked entities in the database, wherein the at  
least one set of linked entities contains a plurality of conceptual entities, each of said  
conceptual entities including a plurality of data values which are distributed amongst the  
plurality of said conceptual entities and each said entity in the said plurality of entities is  
arranged to store at least one data value;
  - (b) providing an additional entity defining an additional entity table in [[the]] said  
database for said at least one set of linked entities; and
  - (c) storing in said additional entity table [[the]] an aggregation of a the said plurality  
of data values representing an aggregation of at least one of the plurality of conceptual  
entities contained in the said at least one set of linked entities, whereby the aggregated  
data values information defining the conceptual entity is [[are]] obtained by performing a  
single read operation on [[the]] said additional entity table.

Appl. No. 10/671,359

Amdt. dated March 20, 2007

Reply to Office Action of December 26, 2006

2. (currently amended) A method for modifying a database having at least one set of linked entities, wherein the at least one set of linked entities contains a plurality of conceptual entities, each of said conceptual entities including a plurality of data values which are distributed amongst the plurality of entities, arranged to store at least one data value, the method comprising the steps of:

- (a) providing defining a table as an additional entity in the database ~~for the said at least one set of linked entities~~; and
- (b) storing in said additional entity table the aggregation of ~~a the~~ said plurality of data values representing an aggregation of at least one of said plurality of conceptual entities contained in ~~[[the]]~~ said at least one set of linked entities, whereby the ~~aggregated data values~~ the information defining the conceptual entity is ~~[[are]]~~ obtained by performing a single read operation on ~~[[the]]~~ additional entity table.

3. (currently amended) A method for reading from a database, comprising the steps of:

- (a) ~~providing including~~ at least one set of linked entities ~~wherein the said at least one set of linked entities contains a plurality of entities and each said entity in the said plurality of entities is arranged to store at least one data value~~; and providing at least one conceptual entity, the said conceptual entity including a plurality of data values which are distributed amongst the plurality of entities;
- (b) providing an additional entity table in ~~[[the]]~~ said database for ~~[[the]]~~ said at least one set of linked entities, said additional entity table comprising the aggregation of ~~[[a]]~~ the plurality of data values representing an aggregation of at least one of the plurality of conceptual entities and stored in the said at least one set of linked entities;
- (c) performing a single read operation on said additional entity table, whereby the plurality of data values defining the said conceptual entity ~~plurality of data values~~ contained within the said at least one set of linked entities are ~~is~~ obtained.

4. (canceled)

Appl. No. 10/671,359  
Amdt. dated March 20, 2007  
Reply to Office Action of December 26, 2006

5. (currently amended) A method in accordance with Claim [[4]]1, wherein the step ~~[[d)](i)~~ of determining the initial read/write ratio includes the further steps of:

(ia) ~~[[d1)]~~ providing data with regard to the time taken to perform a read operation and a write operation on a first implementation of the said database;

(ib) ~~[[d2)]~~ providing data with regard to the time taken to perform a read operation and a write operation on a second implementation of the said database;

(ic) ~~[[d3)]~~ calculating a read time difference between the time taken to perform a read operation on said first implementation of said database and on said second implementation of said database;

(id) ~~[[d4)]~~ calculating a write time difference between the time taken to perform a write operation on said first implementation of said database and on said second implementation of said database; and

(ie) ~~[[d5)]~~ calculating the ratio between the read time difference and the write time difference to determine said initial read/write ratio for said database.

6. (currently amended) A system for reading from a database, comprising:

[[a)] a database means arranged to contain at least one set of linked entities, wherein said at least one set of linked entities contains a plurality of conceptual entities, each of said ~~[[the]]~~ conceptual entities including including a plurality of data values which are distributed amongst ~~[[the]]~~ said plurality of conceptual entities~~[[,]]; a plurality of entities and each said entity is arranged to store at least one data value;~~

[[b)] means for defining an additional entity table in said database; ~~providing an additional entity for the said at least one set of linked entities, the said additional entity comprising the aggregation of a plurality of data values stored in the said at least one set of linked entities; and~~

[[c)] reading means arranged to read ~~[[the]]~~ said plurality of data values representing an aggregation of at least one of the plurality of conceptual entities contained within the said at

Appl. No. 10/671,359

Amdt. dated March 20, 2007

Reply to Office Action of December 26, 2006

~~least one set of linked entities~~ by performing a single read operation on ~~[[the]]~~ said additional entity table.

7. (currently amended) A system for implementing a database, comprising:

[[a)] means for providing at least one set of linked entities in the said database, wherein the said at least one set of linked entities contains a plurality of conceptual entities, each of the conceptual entities including a plurality of data values which are distributed amongst the plurality of conceptual entities; ~~a plurality of entities and each said entity in the said plurality of entities is arranged to store at least one data value;~~

[[b)] means for defining ~~providing~~ an additional entity ~~for the said table in addition to the~~ at least one set of linked entities; ~~[[and]]~~

[[c)] storing means arranged to store, in ~~[[the]]~~ said additional entity table, the aggregation of ~~[[a)] said plurality of data values representing an aggregation of at least one of said plurality of conceptual entities contained in the said at least one set of linked entities;~~ and

[[d)] reading means enabled to read said aggregation of ~~[[a)] said plurality of data values by performing a single read operation on [[the]] said additional entity table to return the information defining at least one conceptual entity.~~

8. (currently amended) A system for modifying a database having at least one set of linked entities, wherein the at least one set of linked entities contains a plurality of conceptual entities, each of said conceptual entities including a plurality of data values which are distributed amongst the plurality of entities ~~a plurality of entities and each said entity in the said plurality of entities is arranged to store at least one data value,~~ comprising:

[[a)] means for providing an additional entity table in ~~[[the]]~~ said database ~~for said at least one set of linked entities;~~

Appl. No. 10/671,359

Amdt. dated March 20, 2007

Reply to Office Action of December 26, 2006

[[ (b) ]] storing means arranged to store, in [[ the ]] said additional entity table, the ~~aggregation of~~ a plurality of data values representing an aggregation of at least one of the plurality of said conceptual entities contained in the said at least one set of linked entities;

[[ (c) ]] a reading means which ~~can be~~ is enabled to read the aggregated data values by performing a single read operation on [ the ] said additional entity table to return the information defining the at least one conceptual entity.

9. (previously amended) A method for increasing database performance and determining an initial read/write ratio for a database, said database having at least one set of linked entities wherein one set of linked entities contains a plurality of entities and each said entity is arranged to store at least one data value, comprising the steps of:

- (a) providing data with regard to the time taken to perform a read operation and a write operation on a first implementation of said database;
- (b) providing data with regard to the time taken to perform a read operation and a write operation on a second implementation of said database;
- (c) calculating a read time difference between the time taken to perform a read operation on a first implementation of a database and on a second implementation of said database;
- (d) calculating a write time difference between the time taken to perform a write operation on a first implementation of said database and on a second implementation of said database; and
- (e) calculating the ratio between the read time difference and the write time difference to determine the said initial read/write ratio for said database;
- (f) establishing a critical read/write ratio (CRW) which provides the ratio of the average number of reads from the entity that are needed for each write to the entity; and
- (g) utilizing said critical read/write ratio to increase performance in said database, when said initial read/write ratio is greater than said critical read/write ratio.

Appl. No. 10/671,359  
Amdt. dated March 20, 2007  
Reply to Office Action of December 26, 2006

10. (previously amended) A method in accordance with Claim 9, wherein the first implementation of said database utilizes at least one set of linked entities.

11. (previously presented) A method in accordance with Claim 9, wherein said second implementation of said database utilizes an aggregation of all data values stored in said at least one set of linked entities.

12. (currently amended) A computer program ~~arranged~~ including instructions which, when loaded on a computing system, to cause the computing system to implement the method of claim 1.

13. (currently amended) A computer readable medium ~~providing~~ incorporating a computer program in accordance with the method of Claim 9.

14. (currently amended) A computer program ~~arranged~~ including instructions which, when loaded on a computing system, cause the computing system to implement the method of Claim 2.

15. (currently amended) A computer readable medium ~~providing~~ incorporating a computer program in accordance with Claim 14 ~~[[7]]~~.

16. (canceled)

17. (canceled)

18. (canceled)

19. (new) A computer program including instructions which, when loaded on a computing system, cause the computing system to implement the method of Claim 3.

20. (new) A computer readable medium incorporating a computer program in accordance with the method of Claim 1.